

# *Project Baseline Summary Report*

Data Source: **EM CDB**

Operations/Field Office: **Idaho**

Site Summary Level: **Idaho National Engineering and Environmental Laboratory**

Project **ID-SNF-101 / National Spent Nuclear Fuel Program**

Report Number: **GEN-01b**

Print Date: **3/10/2000**

HQ ID: **0175**

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## **General Project Information**

### **Project Description Narratives**

#### **Purpose, Scope, and Technical Approach:**

Definition of Scope: The National SNF Program implements the DOE SNF mission through program planning, integration, coordination and execution of activities to maximize efficiency of preparing the SNF for a repository in order to reduce life cycle costs. A major initiative of the National SNF Program, in conjunction with RW and DOE-sites, is to develop guidelines for qualifying DOE SNF for inclusion in the Civilian Radioactive Waste Management System (CRWMS). The National SNF Program workscope also includes:

- Verifying completion of actions to achieve DOE's objective to resolve vulnerabilities by 2002;
- Providing effective liaison with stakeholders and champion the implementation of the Programmatic SNF Management Record of Decision (as amended). The Record of Decision defines the path forward for the management of DOE SNF as regionalization-by-fuel type;
- Developing, implementing and maintaining a centralized inventory database that contains information on the quantity, condition, type, location, origin and enrichment of all DOE SNF for evaluations and reporting;
- Establishing and maintaining DOE SNF program planning documentation to provide consistent direction (EM-60 Strategic Plan, EM Paths to Closure, etc.) and championing and driving to resolution DOE SNF complex-wide issues that facilitate implementation of DOE SNF objectives;
- Prioritizing, sequencing, scheduling (40-year master logic schedule), evaluating, and implementing SNF crosscutting opportunities (e.g., cask availability, standard canister design, storage and transportation analyses, shipping priorities and facility utilization) to accelerate shutdown of existing facilities, reduce the need for new facilities and to facilitate implementation of DOE SNF objectives while reducing life-cycle costs;
- Conducting a technology integration program to implement cost effective and timely SNF technologies to solve known problems and, where required, to provide data necessary for the repository;
- Defining and providing to sites regulatory applicability guidance (e.g., NRC licensing), and developing, in conjunction with RW and custodians of DOE SNF, guidelines for qualifying DOE SNF for inclusion in the repository by 2015;
- Designing, NRC certification, and procuring a transportation cask system for the DOE SNF that will be used to transfer DOE SNF to DOE-RW per the DOE-EM/RW Memorandum of Agreement signed September 1, 1998;
- Conduct real-time, on-site QA oversight of the DOE sites as they characterize and package their DOE SNF for disposal;
- Implement the remaining DOE-EM/RW Memorandum of Agreements assigned to EM.

The following activities will also provide a high degree of confidence that the DOE SNF will meet the technical requirements for acceptance in an RW-managed, NRC-licensed storage or disposal facility: a) Demonstrate to RW how DOE will comply with the requirements for geologic disposal as described in RW technical baseline requirements documents; b) Demonstrate to RW how DOE will provide the necessary data to support RW activities (which include development of a repository site recommendation for the President, initiation of the NEPA process for the repository, viability assessment, performance analyses, support development of a repository license application for submittal to the NRC and design of the repository Mined Geologic disposal system); c) provide guidelines to the custodians of DOE SNF regarding how RW requirements and data needs can be met; and d) establish and facilitate acceptance of a QA program by RW and thereby facilitate the acceptance of the DOE site QA Programs.

Technical Approach: Prior to 1992, most DOE SNF was dispositioned through reprocessing. In 1992, DOE began to phase out its remaining reprocessing operations. In 1995 DOE decided upon a planning base that identified disposal of DOE SNF in the first geologic repository. Since then, deliberations between EM and RW have determined a need to articulate the requirements that must be met in order for DOE SNF to be accepted in the

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## **Project Description Narratives**

repository. In June 1995, the Record of Decision for the Programmatic SNF Management Environmental Impact Statement defined the path forward for the management (40 year period) of DOE SNF as regionalization-by-fuel-type. Under this alternative, as modified by the Idaho Settlement Agreement, SNF management occurs at three sites until a repository is opened. The sites are: the Hanford Site, the INEEL, and the Savannah River Site (SRS). The fuel type distribution is: Hanford fuel will remain at its present location with the exception of its sodium-bonded fuel, which will be transported to the INEEL for treatment; aluminum clad fuel will be consolidated at the SRS; and non-aluminum clad fuels (including the Naval SNF, but excluding the Fort St. Vrain (FSV) SNF, which will be safely maintained at its present location in Colorado) will be transferred to the INEEL.

The National SNF Program will develop the process by which DOE-EM can demonstrate that DOE SNF meets the requirements for acceptance into the repository. The National SNF Program will examine and evaluate all SNF acceptance criteria now being used for DOE SNF, including the requirements for shipping (10 CFR 71), storage (10 CFR 72) and disposal (10 CFR 60). The National SNF program will integrate and consolidate the requirements to minimize the effort needed to comply with these requirements. The guidelines will also define the "data package" including quality assurance requirements, needed to support acceptance of DOE SNF into a repository. The National SNF Program will interface with DOE SNF sites and RW to ensure the acceptability of the characterization process and adequacy of DOE SNF data packages. Implementation of the process and assembly of the data packages for each SNF type will remain the responsibility of the sites. RW will retain responsibility for evaluating and accepting the guidelines, and for including DOE SNF data for all fuel types in its first licensing submittal to the NRC and predecessor documents. Upon completion of the guidelines and their acceptance by RW, implementation for DOE SNF will proceed.

### **Project Status in FY 2006:**

The National SNF Program's planning, integration, and coordination efforts will have helped the DOE achieve many of its SNF objectives including resolution of vulnerabilities at existing SNF storage facilities (by 2002) to ensure the facilities are safe for continued use; supported the DOE-RW repository license application submittal to the NRC (2002); the transfer of SNF from underwater storage to more cost effective dry interim storage (by 2006); and designed and initiated procurement activities of the cask transportation system for DOE SNF (by 2006).

The National SNF Program will have also developed a centralized inventory database; developed a standardized canister and basket design; demonstrated DOE SNF compliance with the repository License Application; provided SNF characterization guidance to the sites; and prioritized fuel transfers between sites. Also, depending upon the outcome of Argonne National Laboratory-West's (ANL-W) demonstration phase of the electrometallurgical research program for treatment of sodium-bonded SNF which is scheduled for completion in June 1999, and if findings from the NEPA process determines the need, the transport and treatment of sodium-bonded fuels may be occurring.

### **Post-2006 Project Scope:**

The National SNF Program's challenge in the management of DOE SNF will continue well beyond 2006. The procurement of the DOE SNF transportation cask system, initiated in 2006, will continue until 2012. DOE SNF will continue to be generated after 2006 and the INEEL and SRS will receive FRR SNF until 2009; shipment of non-aluminum SNF to INEL and aluminum SNF to SRS is currently scheduled between 2012 and 2017; domestic SNF shipments to INEEL and SRS may continue past 2020 depending on continued reactor operation; and shipments to the repository are planned to begin in 2015. The National SNF Program will continue to facilitate Quality Assurance, repository guidance, integration and coordination activities, and resolution of DOE SNF complex-wide issues to facilitate implementation of DOE SNF objectives.

### **Project End State**

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It is assumed that the shipments of DOE SNF to the repository will begin in 2015 and continue through 2035. The DOE SNF transportation cask system will be turned over to RW for operations and maintenance as the cask systems are received from the fabricators and acceptance testing is completed. Storage facilities no longer needed for SNF management will be transitioned to deactivation or other uses. SNF will continue to be generated, packaged, shipped, and disposed of from active sites. The National SNF Program will be phased down when all repository requirements are established, transportation system transferred to DOE-RW, and the first DOE SNF is shipped to the repository. Complete phase-out is currently planned to occur in 2015 when the first DOE SNF is transferred to the repository. The on-going QA activities will be transferred to RW as part of their normal activities associated with the transfer of commercial SNF to the repository.

### **Cost Baseline Comments:**

Escalation of 2.1% compounded after FY 2000 was used in accordance with the direction received for this submittal. No contingency is included. In FY 1998, Congress again recognized the need for supplemental funding to ensure DOE SNF is included in the first repository appropriating an increase of \$15M for the National SNF Program as it did in FY 1997. Congress recognized DOE's increased funding to the Nation SNF Program in FY 1999 by only appropriating an increase of \$5M. Some funding was deferred from FY 2000 to FY 2001 meeting OMB funding marks. Increased funding has been identified starting in FY 2001 to permit DOE-EM to meet its commitments made in the DOE-EM/RW Memorandum of Agreement signed in September 1998. As the National SNF Program assumed a major role in preparing documentation demonstrating that DOE SNF meets repository requirements submitted in the repository license application, increase defense of the data is expected during the NRC's review of the license application. Procurement of the cask transportation system is the main driver for increased National SNF Program costs through FY 2011. In FY 2012, the National SNF Program will begin final transfer of activities to DOE-RW with eventual program closeout beginning in FY 2015 as repository transfers are initiated. DOE-EM must maintain active interfaces with RW and NRC through issuance of a repository license to ensure that DOE-owned SNF is included in the licensed repository.

The estimated costs to perform this work scope for DOE SNF are a small fraction of the costs being incurred to address disposal of commercial fuel into the first repository. This is mainly because most of the cost of the first repository (infrastructure, tunneling, etc.) is done to support storage of commercial fuel; DOE SNF is a small addition to the first repository. The cost savings are realized due to utilization of existing repository modeling and grouping of DOE SNF, allowing enveloping analyses to be performed, and are only realized if DOE SNF is placed in the first repository. (It is estimated that the efforts to use enveloping analyses will save DOE about \$0.5B.) A portion of the costs for the National SNF Program have been through a detailed cost review (i.e., murder board) during February, March and August of 1996. The FY 1997, FY 1998, and FY 1999 enhanced portion are a direct allocation provided through Congressional action. The National SNF Program is undergoing Life-Cycle Planning Process reviews March, April, and May 1999.

### **Safety & Health Hazards:**

The National SNF Program performs program management, integration, and design/procurement activity. The National SNF Program does not direct any operations or construction activities. The transportation cask system will be transferred to DOE-RW for operations. No specific hazards or controls are expected beyond those encountered in normal office environment.

### **Safety & Health Work Performance:**

The National SNF Program performs program management, integration, and design/procurement activity. The National SNF Program does not direct any operations or construction activities. The transportation cask system will be transferred to DOE-RW for operations. The activities are performed

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## Project Description Narratives

in a normal office work environment.

### PBS Comments:

The funding identified at the upper (\$6B) and lower (\$5.5B) levels for the entire EM budget, only funds the base National SNF Program to provide complex-wide integration of SNF activities. Additional funding above the \$6B level for EM is required to evaluate and help establish the requirements for disposal of DOE SNF in the first repository. These requirements are needed as soon as possible to ensure that sites such as INEEL meet their Compliance Agreement milestones for removal of all SNF by 2035. Failure to fund this activity will result in all DOE SNF continuing to reside at the various DOE sites without removal to the repository. The Naval Reactors Facility at the INEEL does not receive funding from DOE's EM organization and has not been evaluated as part of this planning effort. Both the DOE and U.S. Department of Navy (Navy) are committed to removing all spent nuclear fuel from Idaho by 2035, pursuant to the Settlement Agreement among the State of Idaho, the Navy, and the DOE.

Additional funding above the upper level (\$6B) is required starting in FY 1999. Without these funds, DOE SNF will not be included in the first repository license application (2002) and the 10-year plan goal of having DOE SNF in dry storage cannot be achieved. The long-term cost impact to DOE of not performing these activities now will be the overwhelming funding required to prepare SNF for disposal after it has been placed in interim storage; which may require repackaging the SNF a second time prior to disposal. This option is very expensive as it involves the possibility of building new facilities in order to repackage the SNF. It also poses significant programmatic, and health and safety risks associated with the acquisition of new facilities and the redundant handling of SNF.

### Baseline Validation Narrative:

There was an independent validation review by the murder boards in February and March of 1996 of the project scope of work, schedule, cost estimate, and technical approach. A complete "Life Cycle Planning Process" of each PBS will be completed later in fiscal year 1999.

## General PBS Information

**Project Validated?** Yes **Date Validated:** 2/14/1996

**Has Headquarters reviewed and approved project?** No

**Date Project was Added:** 12/1/1997

**Baseline Submission Date:**

**FEDPLAN Project?** Yes

Drivers:	CERCLA	RCRA	DNFSB	AEA	UMTRCA	State	DOE Orders	Other
	N	N	N	Y	N	Y	Y	Y

## Project Identification Information

**DOE Project Manager:** Mark R. Arenaz

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## General PBS Information

**DOE Project Manager Phone Number:** 208-526-1510  
**DOE Project Manager Fax Number:** 208-526-7245  
**DOE Project Manager e-mail address:** arenazmr@inel.gov  
**Is this a High Visibility Project (Y/N):** Y

## Planning Section

### Baseline Costs (in thousands of dollars)

	1997-2006 Total	2007-2070 Total	1997-2070 Total	1997	Actual 1997	1998	Actual 1998	1999	2000	2001	2002	2003	2004	2005	2006	
PBS Baseline (current year dollars)	175,090	130,134	305,224	18,010	17,913	21,598	21,304	27,681	14,275	19,193	18,204	13,777	13,174	12,653	16,525	
PBS Baseline (constant 1999 dollars)	166,213	102,029	268,242	18,010	17,913	21,598	21,304	27,681	13,900	18,304	17,004	12,604	11,804	11,104	14,204	
PBS EM Baseline (current year dollars)	175,090	130,134	305,224	18,010	17,913	21,598	21,304	27,681	14,275	19,193	18,204	13,777	13,174	12,653	16,525	
PBS EM Baseline (constant 1999 dollars)	166,213	102,029	268,242	18,010	17,913	21,598	21,304	27,681	13,900	18,304	17,004	12,604	11,804	11,104	14,204	
	2007	2008	2009	2010	2011- 2015	2016- 2020	2021- 2025	2026- 2030	2031- 2035	2036- 2040	2041- 2045	2046- 2050	2051- 2055	2056- 2060	2061- 2065	2066- 2070
PBS Baseline (current year dollars)	16,870	18,802	19,576	17,629	57,257	0	0	0	0	0	0	0	0	0	0	0
PBS Baseline (constant 1999 dollars)	14,202	15,503	15,810	13,944	42,570	0	0	0	0	0	0	0	0	0	0	0
PBS EM Baseline (current year dollars)	16,870	18,802	19,576	17,629	57,257	0	0	0	0	0	0	0	0	0	0	0
PBS EM Baseline	14,202	15,503	15,810	13,944	42,570	0	0	0	0	0	0	0	0	0	0	0

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# Project Baseline Summary Report

Data Source: EM CDB

Report Number: GEN-01b

Operations/Field Office: Idaho

Print Date: 3/10/2000

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	2007	2008	2009	2010	2011- 2015	2016- 2020	2021- 2025	2026- 2030	2031- 2035	2036- 2040	2041- 2045	2046- 2050	2051- 2055	2056- 2060	2061- 2065	2066- 2070
(constant 1999 dollars)																
<b>Baseline Escalation Rates</b>																
	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009			
	0.00%	0.00%	0.00%	2.70%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%			
	2010	2011-2015	2016-2020	2021-2025	2026-2030	2031-2035	2036-2040	2041-2045	2046-2050	2051-2055	2056-2060	2061-2065	2066-2070			
	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%			

## Project Reconciliation

### Project Completion Date Changes:

Previously Projected End Date of Project: 9/30/2002

Current Projected End Date of Project: 9/15/2015

Explanation of Project Completion Date Difference (if applicable):

### Project Cost Estimates (in thousands of dollars)

Previously Estimated Lifecycle Cost (1997 - 2070, 1998 Dollars): 229,176 Actual 1997 Cost: 17,913 Actual 1998 Cost: 21,304

Previously Estimated Lifecycle Cost of Project (1999 - 2070, 1998 Dollars): 189,959 Inflation Adjustment (2.7% to convert 1998 to 1999 dollars): 5,129

Previously Estimated Lifecycle Cost (1999 - 2070, 1999 Dollars): 195,088

### Project Cost Changes

Cost Adjustments Reconciliation Narratives

Cost Change Due to Scope Deletions (-):

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## Project Reconciliation

Cost Reductions Due to Efficiencies (-):

Cost Associated with New Scope (+): 33,547 New tasks defined in DOE-EM/RW MOA signed 9/1/98: cask transportation systems, shipment planning, QA

Cost Growth Associated with Scope Previously Reported (+):

Cost Reductions Due to Science & Technology Efficiencies (-):

Subtotal: 228,635

Additional Amount to Reconcile (+): -1

Current Estimated Lifecycle Cost (1999 - 2070, 1999 Dollars): 228,634

## Milestones

Milestone/Activity	Field Milestone Code	Original Date	Baseline Date	Legal Date	Forecast Date	Actual Date	EA	DNFSB	Mgmt. Commit.	Key Decision	Intersite
Project Mission Complete	1		9/15/2015								
Complete Transportation Cask Design			9/30/2004								
Deliver 8 Transportation Cask Systems			10/4/2011								
Deployment of Transportation Cask System			10/1/2014								
Project Start			10/1/1996								

## Milestones - Part II

Milestone/Activity	Field Milestone Code	Critical Decision	Critical Closure Path	Project Start	Project End	Mission Complete	Tech Risk	Work Scope Risk	Intersite Risk	Cancelled	Milestone Description
Project Mission Complete	1				Y	Y					The first shipment of DOE SNF from a custodial SNF site will complete the base mission of the Nation
Complete Transportation Cask Design		Y									Complete the design and NRC certification of the DOE Transportation Cask System
Deliver 8 Transportation Cask Systems		Y									Receipt and acceptance of eight transportation cask systems from the

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## Milestones - Part II

Milestone/Activity	Field Milestone Code	Critical Decision	Critical Closure Path	Project Start	Project End	Mission Complete	Tech Risk	Work Scope Risk	Intersite Risk	Cancelled	Milestone Description
Deployment of Transportation Cask System											cask vendor Deployment of the DOE Transportation Cask System to OCRWM and the DOE Sites for cask loading and shipment to a repository.
Project Start				Y							PBS Baseline Start

## Technology Needs

Site Need Code: ID-1.1.20

Site Need Name: Insoluble Neutron Poison

Focus Area Work Package ID:

Focus Area Work Package:

Focus Area:

Agree with Technology Link: Y

Benefits (Cost, Risk Reduction, Both): Cost

Technologies

Cost Savings (in thousands of dollars)

Range of Estimate

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